

Mineral Industry Surveys

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VANADIUM IN JANUARY 2003

Domestic consumption of vanadium in January 2003 was about 11% more than that of the previous month and was about 20% more than that of January 2002, according to the U.S. Geological Survey. Consumer stocks of vanadium, in all forms, were 186 metric tons at the beginning of 2003.

According to Ryan's Notes (2003), the range for U.S. ferrovanadium prices during January was \$4.361 to \$4.500 per pound of vanadium content, as compared with \$4.267 to \$4.489 in December. European ferrovanadium ranged from \$9.833 to \$10.211 per kilogram of vanadium content in January as compared to \$9.400 to \$9.900 in December. In January, vanadium pentoxide prices ranged from \$1.633 to \$1.733 per pound, representing little change from the range of \$1.60 to \$1.70 in December.

McKenzie Bay International, Ltd. (2002§¹) announced plans to build a vanadium "pilot" commercial production facility in Canada in 2003. Building the pilot production plant is the next

step in developing Lac Doré, the largest vanadium deposit in North America and second largest in the world, located near Chibougamau, Quebec. Initially, the pilot facility will produce vanadium pentoxide ranging in purity from technical-grade purity (>99.6%) to high purity (>99.9%). The product will be used to make vanadium electrolyte for vanadium redox batteries. Production capacity of the plant, for all products combined, will be 4 million pounds per year, with expansion possibilities. Other potential markets include the lithium battery, which requires a high-purity vanadium cathode, and another technology that requires vanadium carbide with lithium.

Reference Cited

Ryan's Notes, 2003, [untitled]: Ryan's Notes, v. 9, no. 5, February 3, p. 4.

Internet Reference Cited

McKenzie Bay International, Ltd., 2002 (December 3), McKenzie Bay planning to begin vanadium production in 2003, News Release, accessed March 19, 2003, via URL <http://www.mckenziebay.com/news/021203.htm>.

¹A reference that includes a section mark (§) is found in the Internet Reference Cited section.

TABLE 1
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM 1/

(Kilograms, contained vanadium)

	2002				2003	
	January-December		December		January	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium 2/	2,790,000	166,000	223,000	166,000	248,000	198,000
Vanadium-aluminum alloy	W	W	W	W	W	W
Other 3/	351,000	20,200	20,400	20,200	20,900	20,200
Total	3,140,000	186,000	243,000	186,000	269,000	219,000

p/ Preliminary. W Withheld to avoid disclosing company proprietary data; included with "Other."

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.

3/ Includes other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, other specialty chemicals, and items indicated by symbol W.

TABLE 2
U.S. CONSUMPTION OF VANADIUM, BY END USE 1/

(Kilograms, contained vanadium)

	2002		2003
	January-December	December	January
Steel:			
Carbon	878,000	71,900	82,800
High-strength low-alloy	W	W	W
Stainless and heat-resisting	24,100	1,840	1,880
Full alloy	754,000	60,200	69,900
Tool	265,000	19,600	22,600
Total steel	2,070,000	154,000	177,000
Superalloys	13,400	983	1,280
Miscellaneous and unspecified 2/	1,060,000	88,900	85,700
Total consumption	3,140,000	243,000	269,000

p/ Preliminary. W Withheld to avoid disclosing company proprietary data; included with "Total steel."

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes cast irons, alloys excluding steel and superalloys, chemical and ceramic uses, and other miscellaneous and unspecified uses.

TABLE 3
U.S. IMPORTS AND EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOY AND VANADIUM
METAL, INCLUDING WASTE AND SCRAP 1/

(Kilograms, gross weight)

	Aluminum-vanadium master alloy		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2001	10,100	\$45,100	50,000	\$639,000
2002:				
October	--	--	1,260	182,000
November	19,100	36,100	1,370	52,900
December	--	--	--	--
Year to date	97,500	206,000	32,300	1,270,000
Exports:				
2001	363,000	6,990,000	26,300	380,000
2002:				
October	72,200	1,430,000	1,940	43,300
November	37,900	1,030,000	2,720	16,000
December:				
Canada	8,190	241,000	--	--
Hong Kong	9,770	177,000	--	--
India	350	8,260	--	--
Indonesia	897	26,400	--	--
Japan	4,190	76,500	--	--
Korea, Republic of	--	--	732	8,400
Mexico	3,400	44,200	--	--
United Kingdom	1,300	21,800	--	--
Total	28,100	595,000	732	8,400
Year to date	529,000	11,700,000	49,200	898,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND
OTHER OXIDES AND HYDROXIDES OF VANADIUM 1/

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) 2/		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
Imports for consumption:						
2001	2,550,000	\$20,500,000	600,000	\$3,460,000	1,080,000	\$510,000
2002:						
October	203,000	1,670,000	29,300	238,000	1	3,560
November	192,000	1,720,000	--	--	39	12,000
December:						
Belgium	43,200	369,000	--	--	--	--
Canada	16,300	184,000	--	--	--	--
Czech Republic	15,400	105,000	--	--	--	--
Mexico	--	--	62,400	87,600	--	--
South Africa	--	--	9,500	83,500	--	--
Total	74,900	657,000	71,900	171,000	--	--
Year to date	2,520,000	19,400,000	406,000	1,990,000	42,300	560,000

See footnotes at end of table.

TABLE 4--Continued
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND
OTHER OXIDES AND HYDROXIDES OF VANADIUM 1/

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) 2/		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
Exports:						
2001	70,000	\$768,000	71,400	\$407,000	63,000	\$562,000
2002:						
October	11,200	142,000	7,060	68,200	18,900	185,000
November	14,400	134,000	37,200	205,000	16,400	218,000
December:						
Canada	--	--	--	--	19,000	190,000
Israel	--	--	420	8,360	--	--
Japan	--	--	298	2,820	--	--
Mexico	860	21,500	--	--	--	--
Trinidad	--	--	1,270	14,000	--	--
Total	860	21,500	1,990	25,200	19,000	190,000
Year to date	142,000	1,550,000	91,200	568,000	203,000	1,700,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG 1/

(Kilograms, contained vanadium pentoxide)

	Ash and residues		Ash and residues (not from the manufacture of iron and steel)		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity	Value	Quantity	Value
2001	1,980,000	\$2,270,000	1,980,000	\$1,290,000	998,000	\$1,170,000
2002:						
October	496,000	60,400	240,000	141,000	49,500,000	1,200,000
November	235,000	28,200	174,000	143,000	34,200,000	454,000
December:						
Canada	--	--	946,000	151,000	851,000	837,000
Mexico	460,000	54,400	--	--	--	--
Total	460,000	54,400	946,000	151,000	851,000	837,000
Year to date	3,830,000	520,000	10,300,000	1,560,000	243,000,000	19,900,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS VANADIUM CHEMICALS 1/

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2001	--	--	102,000	\$623,000
2002:				
October	--	--	6,430	64,300
November	--	--	6,230	53,600
December:				
Germany	--	--	312	11,200
Japan	--	--	20	10,500
Total	--	--	332	21,600
Year to date	14,100	390,000	48,100	567,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.